Bollinbrook CE Science Curriculum 2024-2025

'And the child grew and was strong in spirit '

If rooted in Christ, children can **grow** into who they were created to be. Through the implementation of our curriculum our children will acquire the knowledge and skills to help them grow.

Growth in Science	
Science	The national curriculum requirements for Science at both key stages includes the main characteristics of; Physics, Chemistry, Biology and Working scientifically. All children are taught essential aspects of the knowledge, methods, processes and uses of science. By following the National curriculum, children will build up a body of key foundational knowledge and concepts, encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.
Implementation	Science is a core subject taught consistently, once a week for up to two hours, but is discretely taught in many different contexts throughout all areas of the curriculum. For example, through English, i.e. writing a letter to a local politician regarding the closure of a park/biography of a famous scientist's life, etc. As part of the Science curriculum, teachers plan a knowledge organiser which outlines knowledge (including vocabulary) all children must master; a cycle of lessons for each subject, which carefully plans for progression and depth; a low stakes quiz which is tested regularly to support learners' ability to block learning and increase space in the working memory; challenge questions for pupils to apply their learning in a philosophical/open manner. Trips and visits will be used across the academic year to enhance the learning experience. Science units are taught on a year rolling programme. This ensures progression between year groups and guarantees topics are covered.
Assessment	There are more assessments in science because the national curriculum specifies on a year-by-year basis what has to be taught. We assess Science using the focus material 'assessing science knowledge' which is broken down into the year group units. The assessments are end of year summative assessments which take account of the Education Endowment Foundation's view of not assessing too close to the point of learning. Therefore, the tests take account of long-term memory Teachers also use 'quick quizzes' and pre and post learning tasks as part of formative assessment. The 'Working Scientifically' statements are assessed as an on-going feature of our science lessons, whilst the scientific knowledge is assessed away from the point of teaching.

Willow Year EYFS Science					
Plants	Animals, including humans		Everyday materials	Seasonal changes	**Working scientifically**
Explore and compare plants and animals in the local area	Name and describe animals that live in different habitats. Describe different habitats Describe familiar people Learn about caring for yourself		Explore materials Explore how to change how things work, how the wind moves objects and how objects move in water.	Explore and observe the seasons Observe living things throughout the year Explore shadows and rainbows. Listen and identify the source of sounds.	Learn about the Earth, Sun, Moon , planets, stars and space travel
Key Vocabulary					
habitat flower trunk Bulbs/ seeds leaves root	amphibians reptiles mammals herbivore carnivore omnivore	toes fingers touch hearing taste chest	plastic stretch stiff metal liquid Wood	Autumn Winter Spring Summer temperature weather symbol	

Science recommended sequence		
Autumn	**Spring**	**Summer**
Seasonal change – Autumn Humans (EYFS all about me/growth, Y1 labelling body parts/senses) Materials Seasonal change – Autumn/Winter	Animals Seasonal change -Winter/Spring	Plants Seasonal change – Spring/Summer

Oak Year 1/2 Science

Habitats	Animals, including humans	Materials	Living things and their habitats	Seasonal changes	**Working scientifically**
• observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense • notice that animals, including humans, have offspring which grow into adults	• distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects	• explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food	• observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions

	• find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	made from some materials can be changed by squashing, bending, twisting and stretching			
Key Vocabulary					
habitat flower trunk Bulbs/ seeds leaves root	toes fingers touch hearing taste chest amphibians reptiles mammals herbivore carnivore omnivore	plastic stretch stiff metal liquid Wood transparent squashing bending twisting waterproof absorbent Recycle	habitat rainforest desert species pond microhabitats Predator/prey	Autumn Winter Spring Summer temperature weather symbol	

Teach science recommended sequence		
Autumn	**Spring**	**Summer**
Materials	Living things Habitats	Animal inc. humans
Seasonal changes (all year)		

SYCAMORE: Year 3 & Year 4 Science					
States of Matter	Animals, including humans	Light	Rocks and soils	Sound	**Working scientifically**
• compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	• describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey	• recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change	• recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things	• identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

					• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.
Key Vocabulary					
evaporation condensation melting solidifying precipitation degrees - Celsius	oesophagus pancreas organ intestine molars canine Producer/ Consumer	reflection shadows opaque Light source Translucent Beam	Sedimentary Metamorphic Igneous Extinct Fossil Permeable	pitch volume vibrating frequency Decibels hammer	

Teach science recommended sequence		
Autumn	**Spring**	**Summer**
States of matter	Sound Animals Y4 (objectives)	Rocks and soils/light Light (Y3)

ROWAN: Year 5 Science					
Earth and Space	Forces	Properties and changes to materials	Living things and their habitats	Animals, including humans	**Working scientifically**
• describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon relative to the Earth • describe the sun, Earth and moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	• compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials,	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals	• describe the changes as humans develop to old age	• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations

		including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda			• identifying scientific evidence that has been used to support or refute ideas or arguments
Key Vocabulary					
solar system planet spherical orbit astronomy axis	friction gravity air resistance water resistance levers pulleys	dissolve solubility filtering melting separating thermal	puberty gestation reproduction embryo Metamorphosis Fertilisation		

Teach science recommended sequence		
Autumn	**Spring**	**Summer**
Earth and Space Forces Sound (Y4) Electricity (Y4)	Properties and changes of materials	Living thing and their habitats Animals

Ash: Year 6 Science

Light	Animals, including humans	Evolution and inheritance	Living things and their habitats	Electricity	**Working scientifically**
• recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans	• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics	• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram	• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results,

					in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments
Key Vocabulary					
retina cornea iris pupil lens light wave	atriums cardiovascular capillaries pulse ventricles blood vessels Respiration	off-spring adaptation evolution inheritance palaeontologist genotype	Microorganism vertebrates invertebrates species fungi bacteria algae	series circuits cells generator turbine fuses socket	

Teach science recommended sequence		
Autumn	**Spring**	**Summer**
Electricity Living things and their habitats	Evolution and inheritance Light	Animals inc. humans